

Using tourism to achieve positive conservation outcomes for reintroductions of threatened species

Narelle King and Karen Higginbottom

School of Environmental and Applied Sciences, Griffith University, PMB50 GCMC QLD 9726

Current contact details:

Narelle King, PO Box 1967, Hurstville NSW 2220
narelle.king@environment.nsw.gov.au

ABSTRACT

Reintroduction programs have been used to help redress serious declines across species' former ranges, but they often suffer from high expense and low success rates. Tourism is one tool that could be used to support such programs. Tourism enterprises based on reintroduced threatened native mammals cover 13% of the total land area in South Africa, compared with less than 0.2% of the total land area in Australia. There may be potential for tourism to be used more frequently to support reintroductions in Australia.

A review of tourism enterprises based on reintroduced threatened native mammals in Australia and South Africa was undertaken, to investigate the contribution of tourism to the conservation conducted by reintroduction programs in Australia and to make recommendations to help increase the involvement of tourism in reintroductions in Australia. The review shows tourism enterprises based on reintroductions in Australia make significant contributions to conservation, but face difficulties with obtaining licences, accessing threatened species, low levels of support from government, excessive competition from other tourism businesses and the death of reintroduced mammals. The paper draws out lessons that Australia can learn from the extensive South African experience to help overcome these problems.

Key words: tourism, recreation, reintroduction, translocation, wildlife-viewing, wildlife tourism

Introduction

Reintroduction programs are often used to help redress serious declines across species' former ranges. These programs involve releasing captive-bred or translocated animals to wild, or semi-wild, areas that were once part of the species' range, but from which they have become extinct (IUCN/SSC 1995). For many mammal species that remain in only one or two small fragmented populations, reintroduction programs may be the only chance of survival. However, reintroduction programs suffer from a number of problems, particularly high expense and low success rates (Griffith *et al.* 1989; Short *et al.* 1992; Wolf *et al.* 1996; Fischer and Lindenmayer 2000). Therefore, any tool that can be used to help reintroduction programs should be considered.

Tourism that involves viewing of rare or threatened species in natural or semi-natural environments can be used to support programs to reintroduce those species. There is potential for reintroduction programs to raise funding from tourism through: entrance fees; accommodation or camping fees; souvenir and food sales; education and holiday interpretation programs; voluntary contributions from commercial tour operators; donations from tourists; and charging tourists to work as volunteers (Higginbottom *et al.* 2001a; Higginbottom *et al.* 2001b; Higginbottom and Buckley 2001).

Tourism may also be able to generate funding for the local community. In particular, tourism based on reintroductions may attract tourists to regional areas, because wildlife

tourists in Australia are much more likely than other tourists to travel beyond international gateways or regions with international airports (Fredline and Faulkner 2001). Generating funding for the local community has the added benefit of increasing local support for the reintroduction program. There is some evidence that local support can increase the chance of reintroduction programs being successful (e.g. Reading *et al.* 1997).

Integrating reintroductions and tourism also provides an opportunity to educate tourists about reintroductions and conservation. By educating wildlife tourists, a wildlife tourism operator can, in theory, change their attitudes towards conservation and their behaviour (Orams 1996; Higginbottom *et al.* 2001b).

In South Africa, tourism enterprises based on reintroduced threatened native mammals first emerged in the late 1970's. Private wildlife reserves now cover 13% of the total land area in South Africa, far more than the 5% covered by government conservation areas, and almost all of the private reserves have used reintroductions and translocations to stock their property (Goodman *et al.* 2002). In contrast, tourism enterprises based on reintroductions in Australia only emerged in the late 1980's, and still cover a small area. Private wildlife reserves are estimated to cover less than 0.2% of Australia's land area, much less than the 7.85% covered by government conservation areas (Figgis 2004; Department of Foreign Affairs and Trade 2006).

Thus, there may be potential for tourism to be used more frequently to support reintroductions in Australia. This paper investigates, for the first time, the contribution of tourism to the conservation conducted by reintroduction programs in Australia. It uses lessons learnt from the wildlife industry in South Africa to make recommendations to help increase the involvement of tourism in reintroductions.

Methods

Organisations managing tourism enterprises based on reintroduced threatened native mammals in Australia and South Africa were identified through web searches, word-of-mouth and travel guides. There may have been other organisations in both countries at the time that were not identified through these sources.

Face-to-face, semi-structured interviews were conducted with staff of these organisations. In Australia, these occurred in 2001 and 2002 and the organisations comprised: one government conservation department, two government-run zoos and five privately-run organisations. They managed 18 sites in New South Wales, Victoria, South Australia and Western Australia. In South Africa, interviews were conducted in 2004 and involved three government conservation departments and five privately-run organisations. Due to time constraints, only a small sample of organisations identified in South Africa were included in the interviews. These organisations managed hunting or wildlife-viewing sites in KwaZulu-Natal, Eastern Cape and Gauteng provinces.

The owners or managers of the organisations were interviewed. On-the-ground staff were also interviewed from larger organisations (the owners or managers of

the smaller organisations did most of the on-the-ground work). The informants were asked questions about the site, reintroductions, species involved, people involved, post-release management and monitoring and tourism. The information obtained from the interviews was supplemented with information from the organisations' websites, brochures, mission statements and books.

Face-to-face, semi-structured interviews were also conducted with two researchers and seven staff from government agencies in South Africa who have conducted research on tourism enterprises based on reintroductions or who have assisted the enterprises. The informants were asked questions about the major problems faced in setting up and running tourism enterprises based on reintroductions, wildlife ownership laws, licensing requirements, the conservation benefits and limitations of enterprises and wildlife management as conducted by the enterprises. The information obtained was supplemented with published information supplied by the informants, including books, journal articles and pamphlets.

Results

The contribution of tourism to conservation achievements by reintroduction programs in Australia

A wide range of mammal species has been reintroduced by the sample organisations managing tourism enterprises based on reintroductions in Australia (Table 1). The conservation status of the reintroduced species ranged from endangered to lower risk, least concern.

Table 1. Mammals which had been reintroduced (and survived) or were planned to be reintroduced to the sample organisations' sites, and the conservation status of each species according to the IUCN Red List 2003: CR=critically endangered, EN=endangered, VU=vulnerable, NT=near threatened, LR/cd=lower risk, conservation dependent, LR/lc=lower risk, least concern (n=18).

Mammal	Status	Number of sites to which the mammal:	
		Had been reintroduced to	Was planned to be reintroduced to
MARSUPIALIA Macropodidae			
Bridled Nailtail Wallaby <i>Onychogalea fraenata</i>	EN	2	
Brush-tailed Rock-wallaby <i>Petrogale penicillata</i>	VU	1	
Quokka <i>Setonix brachyurus</i>	VU	1	
Rufous Hare-wallaby (Mala) <i>Lagorchestes hirsutus</i>	VU	1	1
Parma Wallaby <i>Macropus parma</i>	NT	2	2
Tammar Wallaby <i>Macropus eugenii</i>	NT	4	
Yellow-footed Rock-wallaby <i>Petrogale xanthopus</i>	NT	1	
Black-flanked Rock-wallaby <i>Petrogale lateralis</i>	LR/lc	1	
Eastern Grey Kangaroo <i>Macropus giganteus</i>	LR/lc	2	
Red-necked Pademelon <i>Thylogale thetis</i>	LR/lc	3	
Red-necked Wallaby <i>Macropus rufogriseus</i>	LR/lc	1	
Swamp Wallaby <i>Wallabia bicolor</i>	LR/lc	1	
Potoroidae			
Long-nosed Potoroo <i>Potorous tridactylus</i>	EN	2	1
Western Barred Bandicoot <i>Perameles bougainville bougainville</i>	EN	1	1

Bilby <i>Macrotis lagotis</i>	VU	3	2
Eastern Bettong (Tasmanian Bettong) <i>Bettongia gaimardi</i>	NT		1
Brush-tailed Bettong (Woylie) <i>Bettongia penicillata</i>	LR/cd	6	
Long-nosed Bandicoot <i>Perameles nasuta</i>	LR/lc		1
Rufous Bettong <i>Aepyprymnus rufescens</i>	LR/lc	1	
Southern Brown Bandicoot (Quenda) <i>Isodon obesulus</i>	LR/lc	4	
Myrmecobiidae			
Numbat <i>Myrmecobius fasciatus</i>	VU	1	
Dasyuridae			
Tiger Quoll <i>Dasyurus maculatus</i>	VU		1
Western Quoll (Chuditch) <i>Dasyurus geoffroyii</i>	VU		2
Eastern Quoll <i>Dasyurus viverrinus</i>	NT	2	1
Phalangeridae			
Common Brushtail Possum <i>Trichosurus vulpecula</i>	LR/lc	1	
Pseudocheiridae			
Western Ringtail Possum <i>Pseudocheirus occidentalis</i>	VU	1	
Common Ringtail Possum <i>Pseudocheirus peregrinus</i>	LR/lc	1	
Vombatidae			
Common Wombat <i>Vombatus ursinus</i>	LR/lc	1	1
MONOTREMATA Ornithorhynchidae			
Platypus <i>Ornithorhynchus anatinus</i>	LR/lc	1	1
Tachyglossidae			
Short-beaked Echidna <i>Tachyglossus aculeatus</i>	LR/lc	1	
RODENTIA Muridae			
Greater Stick-nest Rat <i>Leporillus conditor</i>	EN		1
Shark Bay Mouse <i>Pseudomys fieldi</i>	VU		1
Swamp Rat <i>Rattus lutreolus</i>	LR/lc	1	

Some conservation work other than reintroductions had been conducted at all of the sample organisations' sites (Figure 1). Predator-proof fences had been built or were planned at 73% of the sites, feral animal control had been conducted at all sites and some habitat restoration (revegetation, weed removal, rubbish removal or wetland rehabilitation) had also been conducted at all of the sites. Seventy-two percent of the sample organisations' sites had donated excess animals to other reintroduction sites and a further 22% of sites had sold excess animals to other reintroduction sites.

The importance of tourism to the reintroduction programs at the sample organisations' sites, and hence to the conservation work described above, varies along a continuum, from being the main driving force behind the reintroduction to being of limited importance to the reintroductions (Figure 2).

Problems identified by organisations involved in tourism enterprises based on reintroductions in Australia

The following problems were identified by informants from 25% or more of the sample organisations involved in tourism enterprises based on reintroductions in Australia.

Political and social environment

Difficulties obtaining licences: Informants identified difficulties obtaining licences to be a major problem, with some informants stating that it took four years to obtain all the required licences, even with the assistance of consultants. They said requests for large numbers of reports, scientific studies and surveys before being awarded licences can be a major problem. Informants said they were forced to build facilities that they considered unlikely to be used, which ranged in cost from \$15,000 to \$70,000.

Difficulties accessing threatened species: Informants also said it can be difficult to access threatened species for reintroduction, particularly from government agencies.

Lack of support from government: Informants said it can be difficult to gain support from government. They felt that government agencies did not believe they would contribute to conservation and often placed what they consider unnecessary obstacles in their way that made it difficult to set up their enterprises and reintroduce animals.

Tourism management

Excessive competition: Informants said it was difficult to find a unique angle to use to market enterprises based on



Figure 1. Percent of sample organisations' sites in Australia which had conducted or planned to conduct certain conservation work (n=18).

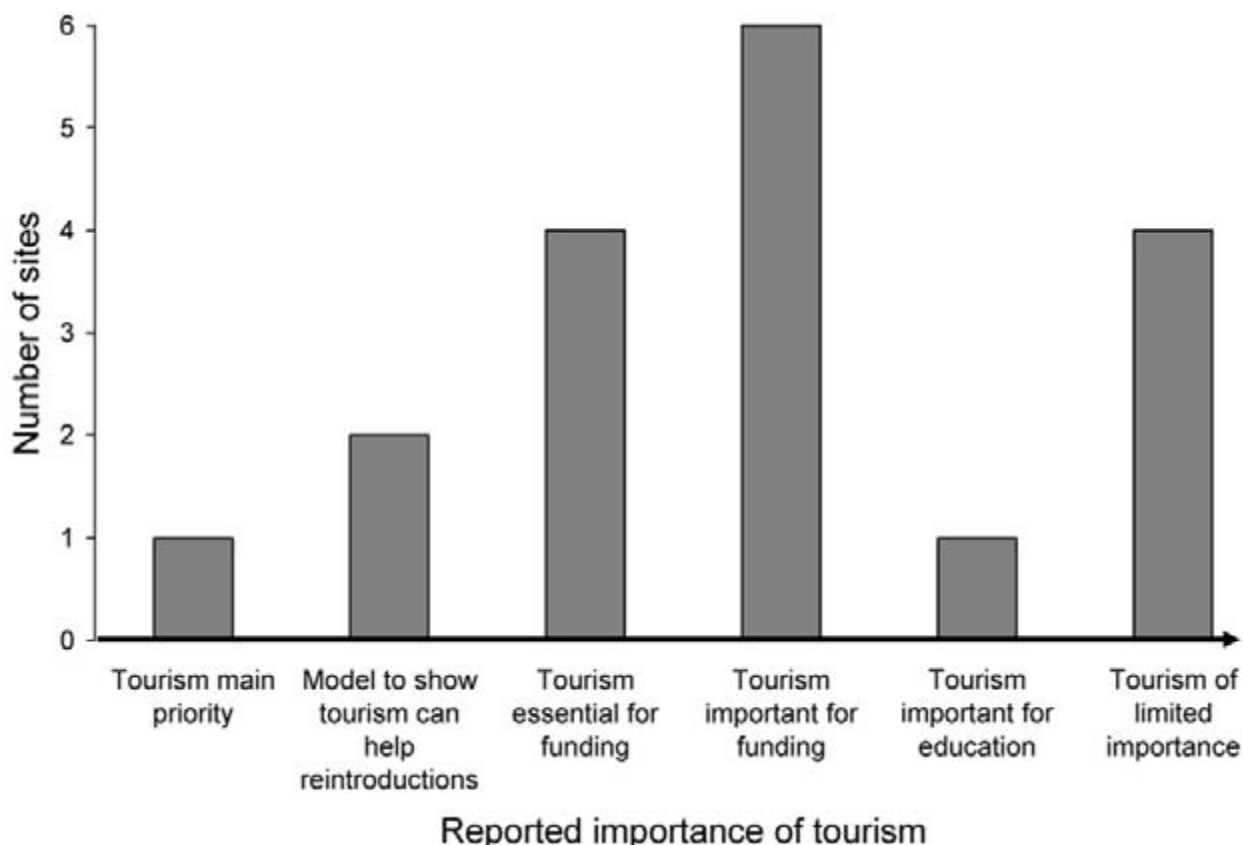


Figure 2. Reported importance of tourism to the sample organisations' sites in Australia (n=18).

reintroduced threatened native mammals, as there were a number of people in different states in Australia doing a similar thing. Some said it was unlikely they would ever make money out of tourism; if they did it would not be for a very long time.

Biological management

Death of reintroduced mammals: Informants had experienced problems with Bilbies *Macrotis lagotis*, Rufous Hare-wallabies *Lagorchestes hirsutus* and Banded Hare-wallabies *Lagostrophus fasciatus* dying after release.

How South Africa has dealt with obstacles facing tourism enterprises based on reintroductions

The following ways that South Africa has dealt with the above obstacles were identified through interviews with informants from the sample organisations involved in tourism enterprises based on reintroductions in South Africa and researchers and staff from government agencies in South Africa.

Political and social environment

Difficulties obtaining licences: Informants in South Africa said it used to take a long time to obtain licences and permits for tourism enterprises based on reintroductions, and this caused many people to move animals illegally. The informants said that the system has now improved dramatically so there are few problems obtaining licences.

Difficulties accessing threatened species: Informants said that in the past, when tourism enterprises based on reintroductions were first starting up in KwaZulu-Natal Province in South Africa, government agencies made excess wildlife available free of charge to landowners who had an appropriate means of transporting animals to their farms. As wildlife utilisation expanded, the agencies provided subsidised wildlife sales and a free service to give wildlife management advice to landowners. Now that tourism enterprises based on reintroductions are firmly established, the agencies conduct wildlife auctions to continue to make excess wildlife available to enterprises. An industry has also developed in South Africa of wildlife farmers (who concentrate on breeding wildlife for sale) and wildlife capture agents (who attend auctions and purchase wildlife, capture and transport wildlife and assist with reintroductions).

Lack of support from government: Informants said there is a now widespread recognition among South African government conservation staff that privately-run organisations make an important contribution to conservation, so they are generally very supportive of tourism enterprises based on reintroductions.

Tourism management

Excessive competition: In South Africa, organisations have diversified into a variety of tourism offerings, from luxury accommodation catering to top-end tourists to basic cabins catering to the budget and backpacker markets. They have also diversified into areas other than wildlife-viewing tourism, including hunting, meat sales and live animal sales.

Biological management

Death of reintroduced mammals: Informants said that in the early stages of the South African wildlife industry many animals died from stress-related capture problems, but now the survival rate of reintroduced animals is over 95%. There has been an improvement in capture and reintroduction techniques and reintroductions are also assisted by wildlife capture agents, since many organisations in South Africa source all their wildlife through these agents.

Negative impacts of tourism enterprises based on reintroductions in South Africa

The following negative impacts of tourism enterprises based on reintroductions in South Africa were identified through interviews with researchers and staff from government agencies in South Africa.

Introduction of species into areas where they were not originally found: Informants said introduction of species to areas where they were not originally found has been widespread in South Africa and has caused hybridisation of similar species, endemic species being out-competed by introduced species and changes in vegetation communities.

Inappropriate management regimes: Informants said some managers have tried to manage wildlife reserves in the same way they previously managed agricultural reserves such as cattle farms. Mistakes made by these managers have included the creation of too many waterpoints (which informants said lead to water-dependent species out-competing water-independent species), the use of agricultural stocking rates (which informants said are inappropriate because wildlife tend to be more specific grazers than stock) and the use of inappropriate fire management regimes.

A focus on large species: Informants said that in order to attract tourists enterprises focus on reintroducing large, charismatic species. South Africa has many small endangered species which are ignored by tourists and tourism enterprises.

Discussion

Tourism enterprises based on reintroductions of threatened native mammals in Australia have made valuable contributions to conservation to supplement and expand the work conducted by government conservation areas. Tourism has driven the conservation contributions (reintroductions, conservation work and donation or sale of excess animals) of at least seven reintroduction sites in Australia. There is potential for greater conservation benefits through increased numbers of tourism enterprises based on reintroductions. Therefore it is desirable to facilitate and assist tourism enterprises based on reintroductions.

In South Africa's long history of tourism enterprises based on reintroductions, supportive governments and legislation has led to an increasing involvement of tourism enterprises in conservation. Two main measures in particular are widely regarded as being responsible for the initial growth of tourism enterprises based on reintroductions in South Africa. The first was changes to the legislation allowing private ownership of native wildlife (and hence trading). The second was government assistance in making excess wildlife available to landowners (Goodman *et al.* 2002; King 2006). These measures, along with the success of the initial tourism enterprises, caused a high value to be placed on wildlife. In turn, the high value led to diversified tourism experiences, a concerted effort being put into improving capture and release

techniques and the development of an industry to assist with reintroductions and accessing of endangered species (game capture agencies and wildlife farmers). The benefits of these tourism enterprises to conservation have caused governments to become even more supportive.

We believe that Australia can learn from the extensive South African experience to increase the involvement of tourism in reintroductions. We recommend Australian State Governments review their legislation and, where necessary, reduce the number of permits required by tourism enterprises based on reintroductions, and consider ways to allow organisations to trade commercially in wildlife and retrieve any escaped animals. Changes should aim to simplify and speed up the licensing processes, increase the value of wildlife in Australia and allow enterprises to diversify into live animal sales, while ensuring protection of wildlife and avoiding the negative conservation impacts encountered in South Africa (e.g. by banning the introduction of species into areas where they were not originally found and ensuring licences cannot be obtained by managers who do not have the knowledge and experience to implement appropriate management regimes).

It would also be helpful for governments in Australia to consider ways of helping tourism enterprises to access threatened species. They may wish to consider some of the measures used by KwaZulu-Natal's government.

As these changes come into place, we recommend tourism enterprises based on reintroductions consider diversifying into live animal sales (selling threatened species for reintroduction to other enterprises and to government agencies). The potential for Australian enterprises to diversify into hunting and meat sales is limited because of differences in social and political acceptability of sport hunting and commercial meat production based on native wildlife in Australia compared with South Africa, and the relative absence of large mammals species in Australia (with kangaroos as the main exception) (Higginbottom and King 2004). However, enterprises may be able to diversify into different types of tourism experiences. For example, high end, luxury accommodation is frequently offered in South Africa but not currently offered by enterprises based on reintroductions in Australia.

We recognise, however, that differences in the business environment in South Africa and Australia (such as significantly lower labour costs and a higher reputation among international tourists in the former) may limit the potential for development of accommodation. Furthermore, the demand for tourism based on reintroduced species is currently unknown and potentially low. The market in Australia is restricted by the fact that many endangered species are small, nocturnal and poorly known; the Australian public has heard of only a small proportion of these species and the international community is even less aware. It is believed that there is a high rate of financial failure among nature-based and wildlife tourism businesses, although there has been no quantitative research on the rate of failure (Higginbottom and Buckley 2003). The demand will limit how many tourism enterprises based on reintroductions will ever be able to succeed. The number

of enterprises that succeed will be increased if enterprises are creative in providing diverse experiences, but the maximum may still be too low to achieve the kinds of conservation outcomes achieved in South Africa.

However, we predict that the conservation benefits of facilitating and assisting tourism enterprises based on reintroductions will go beyond that which can be achieved by tourism enterprises alone. It is a reasonable assumption that as the number of tourism enterprises based on reintroductions in Australia increases, mortality of reintroduced mammals will decline, as long as a concerted effort is put into improving techniques (e.g. by testing some of the techniques used for South African species on some Australian species, Higginbottom and King 2004). It is also expected that government conservation staff will become increasingly supportive of tourism enterprises based on reintroductions over time. These changes, along with increased availability of threatened species, will allow landholders to reintroduce threatened species for lifestyle and conservation reasons. Unlike tourism enterprises, landholders reintroducing species for lifestyle and conservation will not be limited by demand, so there is great scope for the conservation benefits to be spread more widely.

South Africa's experience shows that tourism enterprises tend to focus on the large, charismatic species, so it is unlikely that in Australia reintroductions by tourism enterprises will ever replace the work conducted by government agencies. However, improvements in reintroduction techniques and sale of live animals by enterprises may also benefit government agencies, again amplifying the conservation benefits of facilitating and assisting tourism enterprises based on reintroductions.

Conclusions

Tourism enterprises based on reintroductions in Australia make significant contributions to conservation, but they face a range of obstacles. In principle, governments may be able to support reintroduction efforts by operators of tourism enterprises based on reintroductions by revising licensing systems and policies regarding trade in wildlife and retrieval of escaped animals, and also by better facilitating provision of threatened species for reintroduction to appropriate landowners. Operators themselves may be able to overcome some of their problems by working to improve reintroduction techniques (in partnership with government and scientists) and by diversifying their tourism experiences and/or moving into other products such as live animal sales.

Appropriate application of the recommendations presented in this paper may allow tourism to be used more frequently to support reintroductions. The following benefits could then be expected to occur:

- More new enterprises based on reintroduced threatened native mammals would be established and sustained, providing a sustainable income to the operators;

- More threatened species would be reintroduced to a greater number of locations, so increasing the range and security of these species;

More habitats would be restored, providing broad biodiversity conservation benefits;
 More opportunities would be created to educate tourists about threatened species; and

More experience would be built on how to undertake species reintroductions successfully, some of which could be applied by public and private landholders other than those involved in tourism.

Acknowledgements

The authors gratefully thank staff from tourism enterprises based on reintroduced mammals, game reserves, government reserves and zoos in Australia and South Africa for giving up their time to answer questions and take us on tours around their sites, and for providing

accommodation and food. The research was funded by the Rural Industries Research and Development Corporation, the Sustainable Tourism Cooperative Research Centre, Griffith University and an Australian Postgraduate Award scholarship to Narelle King.

References

- Department of Foreign Affairs and Trade. 2006. *Australia Now: Australia's National Parks*. Publ. Internet - http://www.dfat.gov.au/facts/national_parks.html
- Figgis, P. 2004. *Conservation on private lands: the Australian experience*. IUCN, Gland, Switzerland and Cambridge, UK.
- Fischer, J. and Lindenmayer, D. B. 2000. An assessment of the published results of animal relocations. *Biological Conservation* 96:1-11.
- Fredline, L. and Faulkner, B. 2001. *International market analysis of wildlife tourism*. CRC for Sustainable Tourism, Queensland.
- Goodman, P. S., James, B. and Carlisle, L. 2002. Wildlife utilisation: its role in fostering biodiversity conservation in KwaZulu-Natal. Pp. 21-30 in *Mainstreaming biodiversity in development* edited by S. Pierce, R. Cowling, T. Sandwith and K. MacKinnon. The World Bank, USA.
- Griffith, B., Scott, J. M., Carpenter, J. W. and Reed, C. 1989. Translocation as a species conservation tool: status and strategy. *Science* 245:477-480.
- Higginbottom, K. and King, N. 2004. *The live trade in free-ranging wildlife in South Africa, and implications for Australia*. Rural Industries Research and Development Corporation, Australia.
- Higginbottom, K. and Buckley, R. 2003. *Terrestrial wildlife viewing in Australia*. CRC for Sustainable Tourism, Australia.
- Higginbottom, K., Rann, K., Moscardo, G., Davis, D. and Muloin, S. 2001a. *Part II: Status assessment. Status assessment of wildlife tourism in Australia: an overview*. CRC for Sustainable Tourism, Australia.
- Higginbottom, K., Northrope, C. and Green, R. 2001b. *Positive effects of wildlife tourism on wildlife*. CRC for Sustainable Tourism, Australia.
- IUCN/SSC. 1995. *Guidelines for reintroductions. 41st Meeting of the IUCN Council*. Gland, Switzerland.
- King, N. 2006. *Tourism based on reintroductions of threatened mammals*. Unpublished PhD thesis. Griffith University, Gold Coast, Australia.
- Orams, M. B. 1996. A conceptual model of tourist-wildlife interaction: the case for education as a management strategy. *Australian Geographer* 27:39-51.
- Reading, R. P., Clark, T. W. and Griffith, B. 1997. The influence of valualational and organizational considerations on the success of rare species translocations. *Biological Conservation* 79:217-225.
- Short, J., Bradshaw, S. D., Giles, J., Prince, R. I. T. and Wilson, G. R. 1992. Reintroduction of macropods (Marsupialia: Macropodoidea) in Australia – a review. *Biological Conservation* 62:189-204.
- Wolf, C. M., Griffith, B., Reed, C. and Temple, S. A. 1996. Avian and mammalian translocations: update and reanalysis of 1987 data. *Conservation Biology* 10:1142-1154.

APPENDIX I



Brush-tailed rock wallaby at captive breeding facility.
 Photo, N. King.



Tiger quoll at captive breeding facility.
Photo, N. King.



Brushed-tailed bettong at
reintroduction site.
Photo, N. King.



Nyala at wildlife auction, South Africa.
Photo, N. King.



Wildlife auction, South Africa.
Photo, N. King.

APPENDIX I



Elephants at reintroduction site, South Africa.

Photo, N. King.



Zebra at reintroduction site, South Africa.

Photo, N. King.